Volunteer Lake Assessment Program Individual Lake Reports
STONE POND, MARLBOROUGH, NH

MORPHOMETRIC DATA

							TROPHIC CLASSIFICATION		KNOWN EXOTIC SPECIES

Watershed Area (Ac.):	704	Max. Depth (m):	14.6	Flushing Rate (yr¹)	1	Year	Trophic class	
Surface Area (Ac.):	65	Mean Depth (m):	6	P Retention Coef:	0.63	1979	OLIGOTROPHIC	
Shore Length (m):	2,400	Volume (m³):	1,570,500	Elevation (ft):	1296	1993	OLIGOTROPHIC	

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

STONE POND - TOWN BEACH	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.
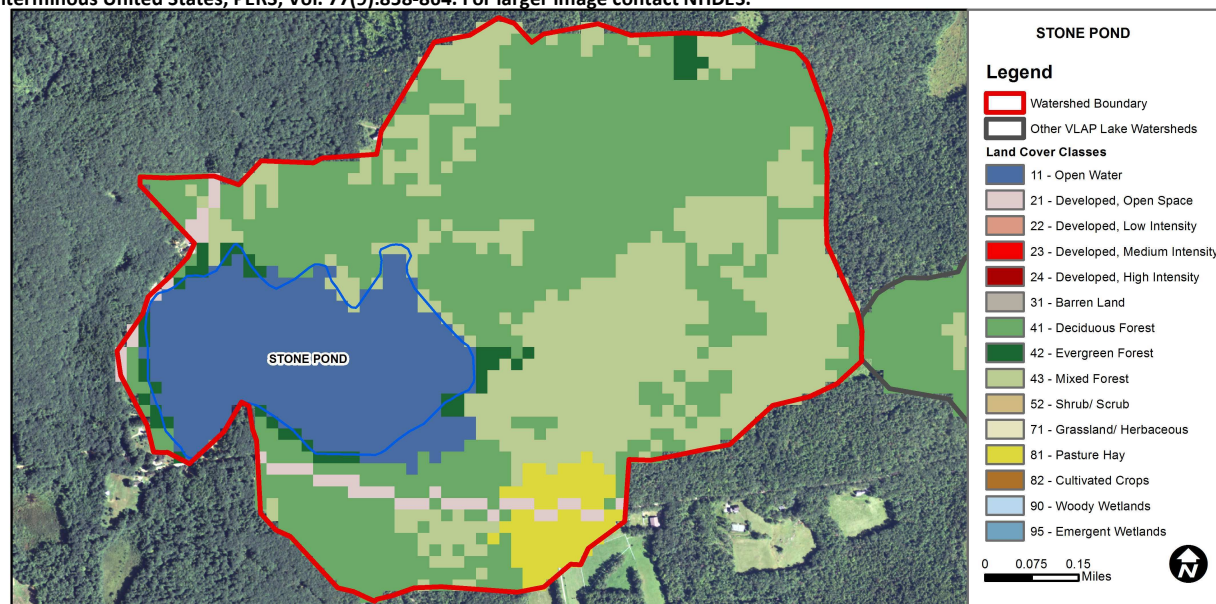
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	17.1	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	2.18	Deciduous Forest	45.64	Pasture Hay	3.34
Developed-Low Intensity	0	Evergreen Forest	2.46	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	29.5	Woody Wetlands	0
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics*)

- **CHLOROPHYLL-A:** Chlorophyll levels were stable and low from July to August. Average chlorophyll increased slightly from 2013 but remained much less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot, Inlet and Outlet conductivity levels were low and less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic (upper water layer) conductivity since monitoring began. Several other area lakes have experienced a similar trend.
- **TOTAL PHOSPHORUS:** Epilimnetic and Metalimnetic (middle water layer) phosphorus levels decreased slightly from July to August and were low and much less than the state median. Historical trend analysis indicates highly variable epilimnetic phosphorus levels since monitoring began. Hypolimnetic (lower water layer) phosphorus levels increased slightly from July to August but remained less than the state median. Inlet phosphorus levels were low in July and then increased to average levels in August. Outlet phosphorus levels were low.
- **TRANSPARENCY:** Transparency was good and Increased (improved) from June to July. Average transparency improved from 2013 and was much better than the state median. Historical trend analysis indicates stable transparency since monitoring began.
- **TURBIDITY:** Epilimnetic and Metalimnetic turbidities were slightly elevated in June following significant storm events and high water levels. Hypolimnetic turbidity increased from July to August but remained with an average range for that station. Inlet and Outlet turbidities were low.
- **PH:** Epilimnetic pH was less than the desirable range 6.5-8.0 units in July and then was within the desirable range in August. Metalimnetic, Hypolimnetic, Inlet, and Outlet pH levels were generally less than desirable. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began.
- **RECOMMENDED ACTIONS:** Deep spot turbidity, phosphorus levels, and water level were higher following significant storm events in July. This indicates potential areas of erosion in the watershed and excess nutrients could promote increases in algal growth. This highlights the importance of managing stormwater runoff in the watershed. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource for homeowners, as well as the U.S. Forest Service's "Environmentally Sensitive Road Maintenance for Dirt and Gravel Roads". Keep up the great work!

Station Name	Table 1. 2014 Average Water Quality Data for STONE POND						
	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	Total P ug/l	Trans. m NVS	Turb. ntu	pH
Epilimnion	2.35	2.32	23.1	5	5.41	1.21	6.50
Metalimnion			24.3	7		1.08	6.23
Hypolimnion			19.2	10		1.74	6.22
Inlet			32.0	10		0.88	5.39
Outlet			24.5	5		0.90	6.51

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Improving	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Worsening	Data significantly decreasing.	Transparency	Stable	Trend not significant; data show low variability.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.

Historical Trend Epilimnetic Conductivity and pH

Historical Deep Spot Chlorophyll-a, Epilimnetic Total Phosphorus & Transparency Data